



CURRICULUM

T  
77  
A3  
A32  
1979

ALTA  
373.196  
1979  
Gr.7-12

CURRGDHT

CURR

# HANDBOOK IN INDUSTRIAL EDUCATION

FOR GUIDANCE TO TEACHERS  
COUNSELLORS AND ADMINISTRATORS

**Alberta**  
EDUCATION  
1979

Ex LIBRIS  
UNIVERSITATIS  
ALBERTAEASIS



# CONTENTS

Preface . . . . .	i
I. INTRODUCTION . . . . .	1
II. INDUSTRIAL EDUCATION - DEFINITION . . . . .	2
III. OBJECTIVES . . . . .	2
A. Goals of Schooling . . . . .	4
B. Goals of Education . . . . .	5
C. Objectives of Industrial Education . . . . .	6
1. Personal Growth . . . . .	6
2. Career Exploration . . . . .	7
3. Occupational Skills . . . . .	7
IV. PROGRAM ORGANIZATION . . . . .	8
A. Elementary School . . . . .	8
B. Junior High School Industrial Education . . . . .	8
C. Industrial Education 10, 20, 30 Program . . . . .	10
D. Industrial Education 12, 22, 32 Program . . . . .	13
1. Flexibility and Scheduling . . . . .	13
2. Student Prerequisites . . . . .	16
3. Articulation . . . . .	24
a. Institutes of Technology . . . . .	24
b. Apprenticeship Branch . . . . .	24
V. DESCRIPTION OF COURSES . . . . .	27
1. Industrial Education 10, 20, 30 . . . . .	27
A. Electricity-Electronics and Computer . . . . .	28
B. Materials . . . . .	30
C. Power Technology . . . . .	32
D. Visual Communications . . . . .	34
E. General . . . . .	36
2. Industrial Education 12, 22, 32 Courses . . . . .	37
A. Visual Communications . . . . .	37
a. Drafting . . . . .	37
b. Graphic Arts . . . . .	38
c. Commercial Art . . . . .	39



B.	Mechanics . . . . .	40
a.	Auto Body . . . . .	40
b.	Automotives . . . . .	41
c.	Aircraft Maintenance . . . . .	42
d.	Related Mechanics . . . . .	42
C.	Construction and Fabrication . . . . .	44
a.	Building Construction . . . . .	44
b.	Machine Shop . . . . .	45
c.	Welding . . . . .	46
d.	Piping . . . . .	46
e.	Sheet Metal . . . . .	47
D.	Electricity-Electronics . . . . .	48
a.	Electricity-Electronics . . . . .	48
b.	Electricity . . . . .	49
c.	Electronics . . . . .	49
E.	Personal Services . . . . .	50
a.	Beauty Culture . . . . .	50
b.	Food Services . . . . .	51
c.	Fashion and Furnishings . . . . .	52
d.	Health Services . . . . .	53
F.	Performing Arts . . . . .	54
a.	Performing Arts . . . . .	55
b.	Television Crafts . . . . .	55
G.	Horticulture . . . . .	56
a.	Horticulture . . . . .	56
b.	Land and Life 10, 20, 30 . . . . .	56
3.	Courses Related to Industrial Education . . . . .	57
A.	Production Science 30 . . . . .	57
B.	Work Experience 25 and 35 . . . . .	57
VI.	SAFETY . . . . .	58
VII.	ORGANIZATION FOR TEACHING . . . . .	58
A.	Teacher Qualification . . . . .	58
B.	Facility Standards . . . . .	58
VIII.	GRANTS . . . . .	59

## PREFACE

The purpose of this Handbook is to provide ready access to information concerning the Industrial Education program.

Counsellors should find the Industrial Education program organization with the matrix defining major, minor and related areas useful in helping students plan their total program.

Administrators should find the document useful in helping them understand the purpose of Industrial Education in the context of their system and then plan ways of making it functional.

Regional Office Consultants in Calgary and Edmonton are available to help with specific planning and up-dating of information.

Graphics: Lenore Bell

Typing: Jeni Ellman  
Kim Blevins

Photographs courtesy of: The Edmonton Separate School Board  
Alberta Education Collection



Digitized by the Internet Archive  
in 2012 with funding from  
University of Alberta Libraries

<http://archive.org/details/handindustrialed79albe>

## INDUSTRIAL EDUCATION HANDBOOK

### I. INTRODUCTION

Industrial Education has in the past decade added a new dimension to the program for educating young people at the secondary school level. For many students it has opened new options to help prepare them for the life ahead while enjoying their studies now. The authors of the Industrial Education curriculum recognize that the needs of society have changed and with them the approach to knowledge acquirement. Students today must be helped; to learn how to learn, to conduct inquiry, to study independently, to make choices and decisions, to use technology, and to live with change.

The Industrial Education program is concerned with career development. Because careers today do not develop along predictable lines our education program must provide considerable flexibility so that students have an option of several career choices. This is possible for several reasons. A person who has been broadly educated is able to learn what he needs to know, within limitations, about a new job. With the general education level of the society rising the future worker needs a broad as well as experience based education. Such an education offers students subsequent chances for rapid and successful specialization. With this in mind the learning experiences should be such that they become the basis upon which specialization can be built.

Our task in the secondary school then, is to provide students not only with entry skills for several careers but to orient the program to meet social and cultural goals. This means that the various courses or disciplines must be interrelated. Industrial Education provides a unique opportunity for the teacher to demonstrate these relationships and, further the goals of Industrial Education by means of the motivation created through practical applications. Thus the experiences students are exposed to should provide them with realistic criteria for career guidance.

This handbook will outline the goals of Industrial Education and suggest procedures and ideas to help students achieve them.

## II. INDUSTRIAL EDUCATION - DEFINITION

Industrial Education is a program consisting of courses that provide a continuum of experiences, starting with exploratory experiences and activities in the elementary and junior high school, expanding in the high school to the development of skills in career fields, and culminating in on-the-job experience.

Industrial Education at the junior high school, the exploratory phase of the continuum, provides the opportunity for the students to explore, reason, experiment and discover the reality of the technological society in which they live. The content of the program deals with industry, its organization, materials, processes, products, occupations, and the problems resulting from the impact of technology on society.

Following the exploratory phase, students may begin orientation studies in a career field. They may select courses of a more general nature in the Industrial Education 10 series or alternately take an introductory 12 course related directly to a career field. From here they advance to the more specific courses in the Industrial Education program which prepare them for a career, Chart 1 on page 3 illustrates the Industrial Education program in conceptual form showing the advancement of a student from the awareness or familiarization stage to exploration, orientation, preparation material processes, drawing and interpretation and a knowledge of the basic concepts related to the technologies. All the courses place emphasis on practical work and applied theory.

## III. OBJECTIVES

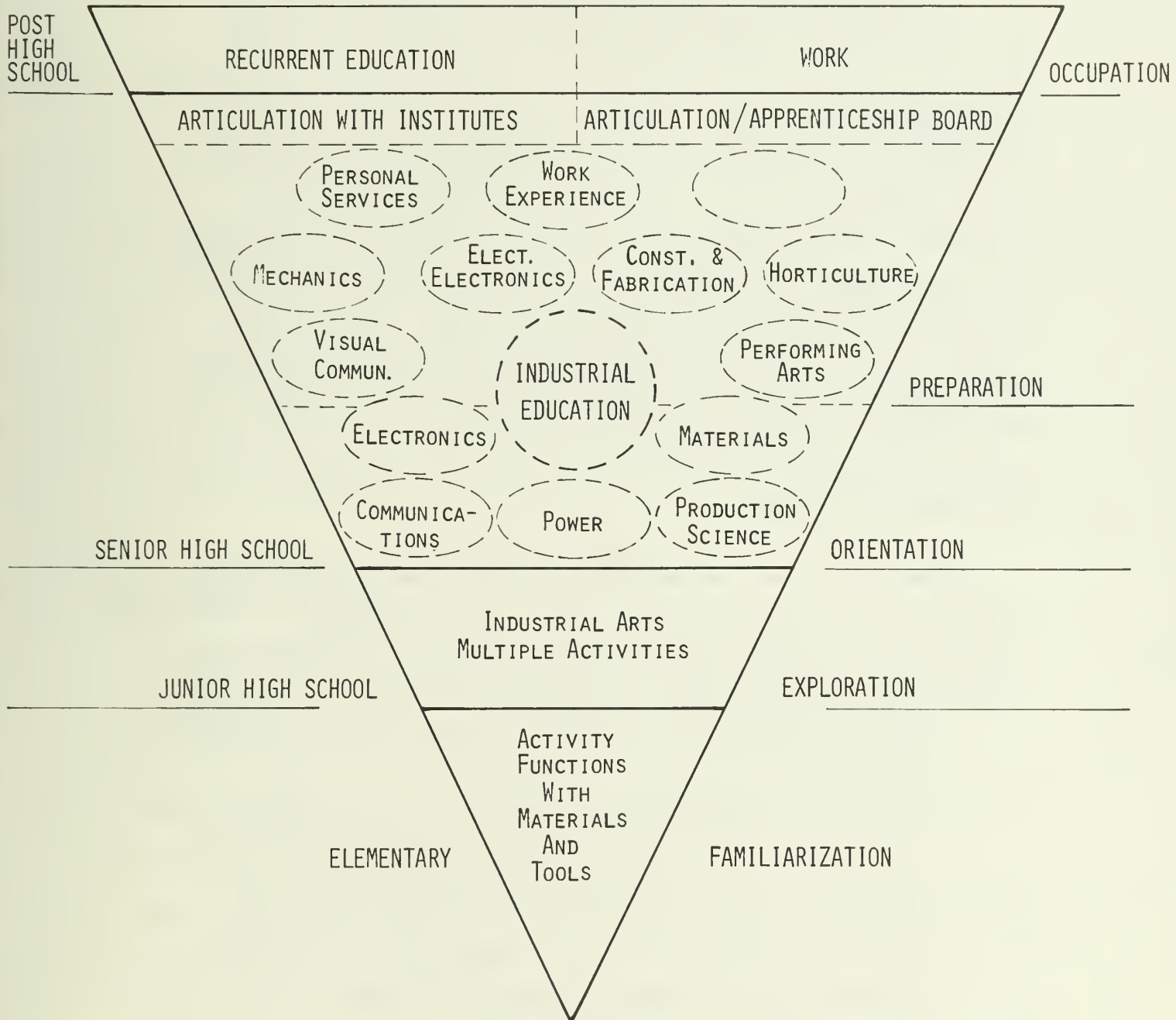
The educational programs in our schools must give students an opportunity to start a life plan - a plan that prepares them for coping with their needs immediately following school, yet at the same time allowing considerable opportunity to diversify their choice of career options. The Industrial Education program provides such options through the introduction of courses that can be sequenced in a number of patterns. Such a program capitalizes on the student's interests while adding relevance to the tool subjects such as mathematics, science and English.



# ALBERTA INDUSTRIAL EDUCATION PROGRAM

FOR

CAREER CHOICE AND DEVELOPMENT



LEGEND: \_\_\_\_\_ SOLID LINE INDICATES LEVELS.

----- BROKEN LINES AND OPEN SPACES INDICATE OPPORTUNITY TO TRANSFER TO OTHER OPTIONS.

The development of positive attitudes to craftsmanship, work and the fellow worker are all important responsibilities shared by the schools.

While the school makes a very important contribution to education, it is only one of the agencies involved in the education of youth. The home, the church, the media and community organizations are also very significant influences on children. It is useful, to delimit the role of schooling and education. Education refers to all the learning experiences the individual has in interacting with the physical and social environment; it is a continuing and lifelong process. Schooling, which has a more limited purpose, refers to the learning activities planned and conducted by a formally structured agency which influences individuals during a specified period. There is, of course, a very close relationship between schooling and education - the learning which occurs in school influences and is influenced by what is learned outside the school.

#### A. GOALS OF SCHOOLING

Schooling, as part of education, accepts primary and distinctive responsibility for specific goals basic to the broader goals of education. Programs and activities shall be planned, taught and evaluated on the basis of these specific goals in order that students:

- Develop competencies in reading, writing, speaking, listening and viewing.
- Acquire basic knowledge and develop skills and attitudes in mathematics, the practical and fine arts, the sciences and the social studies (including history and geography) with appropriate local, national and international emphasis on each.
- Develop the learning skills of finding, organizing, analyzing, and applying information in a constructive and objective manner.
- Acquire knowledge and develop skills, attitudes and habits which contribute to physical, mental and social well-being.

- Develop an understanding of the meaning, responsibilities, and benefits of active citizenship at the local, national and international levels.
- Acquire knowledge and develop skills, attitudes and habits required to respond to the opportunities and expectations of the world of work.

Because the above goals are highly interrelated, each complementing and reinforcing the others, priority ranking among them is not suggested. It is recognized that in sequencing learning activities for students some goals are emphasized earlier than others; however, in relation to the total years of schooling, they are of equal importance.

In working toward the attainment of its goals, the school will strive for excellence. However, the degree of individual achievement also depends on student ability and motivation as well as support from the home. Completion of diploma requirements is expected to provide the graduate with basic preparation for lifelong learning. Dependent on program choices, the diploma also enables job entry or further formal study.

## B. GOALS OF EDUCATION

Achievement of the broader goals of education must be viewed as a shared responsibility of the community. Maximum learning occurs when the efforts and expectations of various agencies affecting children complement each other. Recognizing the learning that has or has not occurred through various community influences, among which the home is most important, the school will strive to:

- Develop intellectual curiosity and a desire for lifelong learning.
- Develop the ability to get along with people of varying backgrounds, beliefs and lifestyles.
- Develop a sense of community responsibility which embraces respect for law and authority, public and private property, and the rights of others.

- Develop self-discipline, self-understanding, and a positive self-concept through realistic appraisal of one's capabilities and limitations.
- Develop an appreciation for tradition and the ability to understand and respond to change as it occurs in personal life and in society.
- Develop skills for effective utilization of financial resources and leisure time and for constructive involvement in community endeavors.
- Develop an appreciation for the role of the family in society.
- Develop an interest in cultural and recreational pursuits.
- Develop a commitment to the careful use of natural resources and to the preservation and improvement of the physical environment.
- Develop a sense of purpose in life and ethical or spiritual values which respect the worth of the individual, justice, fair play and fundamental rights, responsibilities and freedoms.

The ultimate aim of education is to develop the abilities of the individual in order that he might fulfill his personal aspirations while making a positive contribution to society.

### C. OBJECTIVES OF INDUSTRIAL EDUCATION

Courses in Industrial Education can help achieve the Goals of Schooling and Education. The program objectives are more focused and give direction to the teacher.

The objectives of Industrial Education are classified in three areas with the following purposes:

#### 1. Personal Growth

To provide opportunities for the individual growth of the student through the development of acceptable personal and social values necessary in a productive society.

- a. To provide a technical environment which motivates and stimulates individuals to discover their interests and develop personal and social responsibilities.



- b. To assist in the development of positive attitudes toward safety.
- c. To assist in the development of positive attitudes towards conservation and ecology.
- d. To assist in the development of consumer values.

## 2. Career Exploration

To provide the student with experiences which will assist in making realistic career choices.

- a. To provide students within a technical environment an opportunity to become acquainted with the skills, technical requirements, working conditions, responsibilities, opportunities, and rewards in a variety of career fields.
- b. To relate their own interests, abilities, likes, dislikes and values to several career fields.

## 3. Occupational Skills

To develop basic competencies, integrating cognitive and psychomotor skills to enter a family of occupations or post-secondary institutions for further education.

- a. To provide exploratory experiences in the use of tools, equipment and materials appropriate to various technologies prevalent in a productive society.
- b. To develop an understanding of the interrelationship of various technologies.
- c. To provide a technical environment for students to synthesize their accumulated knowledge in the solution of practical problems.
- d. To assist the student to develop habits that will be conducive to the establishment of a safe environment.

#### IV. PROGRAM ORGANIZATION

##### A. ELEMENTARY SCHOOL

Industrial Education is not taught as a separate discipline at the elementary school level. Rather, the concepts of work, the use of tools and materials are integrated with all subject areas. The teaching strategy of "Integrated Practical Activities" (I.P.A.) was introduced in 1976 to help elementary teachers incorporate appropriate activities in a "learning by doing" environment. Each activity should be deliberately selected so that it reinforces a learning concept. The activity should be treated as part of a subject area, not as an entity by itself. Activities may and should cross many disciplines, integrating with existing subject areas.

##### B. JUNIOR HIGH SCHOOL INDUSTRIAL EDUCATION

The Junior High School Industrial Education program encompasses four major fields of study which are subdivided into sixteen modules of content. The length of a module should require about twenty-five hours of work.

Students study in a multiple activity laboratory where from three to six different types of workstations are operational at one time. Each workstation is designed for a maximum of six students and contains all the tools and materials needed.

During the three years in junior high the student should explore a minimum of three different areas in a year.

The purpose of this program is to provide students with content and an environment where they can explore a number of technologies and trade areas which can be helpful to them when deciding on future high school courses or possible careers.

While no sequence for programming modules is prescribed, the teacher should allow for student maturity and interest in the selection of modules.

The modules of the program are as follows:

A. Power Technology

1. Electricity
2. Electronics/Computer
3. Power Mechanics

B. Materials Technology

1. Earths
2. Lapidary and Art Metals
3. Leather and Textiles
4. Metals
5. Plastics
6. Woods

C. Visual Communications Technology

1. Graphics
2. Photography/Drafting

D. Synthesizing Modules

1. Construction
2. Industrial Simulation
3. Consumerism
4. Student Contracting
5. Developmental Research

### C. INDUSTRIAL EDUCATION 10, 20, 30 PROGRAM

The Industrial Education program courses are identified as 1E 10A, 20A, 30A, and 1E 10B, 20B, and 30B.

The tens and twenties are 4-5 credits and the thirties are 5 credits.

The courses are made up of modules, each with a minimum of 25 hours of content and may be expanded to 33½ hours. Three to five modules make up the requirements for 4-5 credits.

There are fifty six modules to choose from with about an equal number from each of the career fields:

- Power
- Materials
- Visual Communications
- Electricity-Electronics - Computer

Three modules of a general nature are also available. These are:

- Research
- Developmental module
- Production Science module.

Specific programming is a local decision. If a cluster of modules in an area or career field is desired this can be scheduled. Sequencing, too, is left to the teacher and students insofar as content allows it.

Procedurally, students may register in four modules for a 4-5 credit course. The first four taken by a student will be registered as 10A. The next four modules could be called 20A and so on. If after having completed 13 to 15 credits the student wishes to continue, he/she may do so and the next course becomes 10B. An alternative would be to register in eight modules for ten credits and identify the courses as 10A and 10B. The "A" and "B" connotations have no significance other than to identify the sequence of modules. However, modules should not be repeated.

The Industrial Education 10, 20, 30 series is flexible and versatile, allowing schools with one or multiple laboratories to plan maximum use of their facilities.

The modules in the Industrial Education 10, 20, 30 program are listed on page 11.

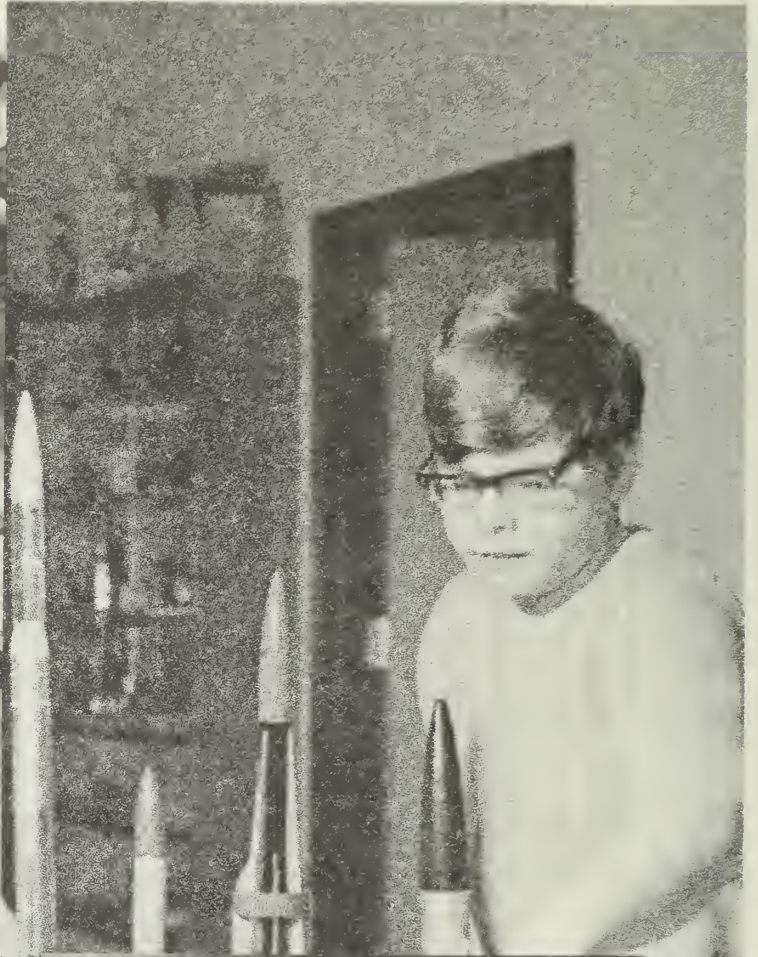


# INDUSTRIAL EDUCATION 10, 20, 30 Matrix

(Each module is 25 to 33 hours in length)

## CAREER FIELD

A. Electricity-Electronics	B. Materials	C. Power Technology	D. Visual Communications
1. Electricity	1. General Woods	1. Conventional Heat Engines	1. Offset Lithography
2. Electronics	2. Building Construction I	2. Small Engine Tune-Up	2. Line Photography
3. Power Supplies	3. Building Construction II	3. Small Engine Overhaul	3. Black and White Photography
4. Amplifiers	4. Cabinet Making I	4. Automobile Care	4. Color Photography
5. Audio	5. Cabinet Making II	5. Automobile Tune-Up	5. Screened Photography
6. Servicing	6. General Metals	6. Mechanical Systems	6. Layout and Design
7. Radio	7. Sheet Metal	7. Electro-Mechanical Controls	7. Offset and Printing Production
8. Television	8. Machine Shop	8. Electrical Systems	8. Mechanical Drafting
9. Logic Circuits	9. Welding Arc	9. Nonconventional Power Sources	9. Topographical Drafting
0. Computer	10. Welding Gas	10. Appliance Repairs	10. Architectural Drafting
1. Electric Wiring	11. Foundry	11. Hydraulics and Fluidics	11. Relief Printing
2. Design and Construction	12. Plastics I	12. Pneumatics and Fluidics	12. Print-Machine Techniques
	13. Plastics II		
	14. Earths Ceramics		
	15. Earths Concrete		
	16. Textiles		
	17. Foods		
	E. General Modules		
		1. Developmental	
		2. Research	
		3. Production Science	



#### D. INDUSTRIAL EDUCATION 12, 22, 32 PROGRAM

##### 1. Flexibility and Scheduling

The Industrial Education 12, 22, 32 program is a series of modules which develop competencies leading to seven different career fields.

Entry into a career field may be gained by taking one of several introductory courses. These are:

1. the "12" course designated for each major, or
2. two modules from the Industrial Education "10,20,30" series related to the anticipated major, or
3. one half of a "12" course. The other half would be another half "12" or a module from the "10" program. The course would be recorded as Industrial Education "10".

Following the introductory course the student may advance to the major area of study by selecting any number of five credit modules from the courses designated as "22" or "32". The scheduling and sequencing of the modules is the responsibility of the local school personnel but must be in accordance with the regulations pertaining to prerequisites.

A student registered in a second or third level course ("22" or "32") is regarded as taking a major in that course area. Having established a major the student may select courses designated as minors and in this way broaden his practical skill base in a career field or even several career fields. However, students must complete all the preceding modules in a major series (usually six) before taking the 32C module (exception: Beauty Culture).

The major and minor modules available in each career field and the provision for related studies make it possible to increase the options for the students.

The matrix, page 12, lists the entry level courses, the major areas of study for each career field and the related minors. In addition, a student may select courses from the Industrial Education 10,20,30 series, Business Education, Home Economics and/or Work Experience to supplement the career field.

Course modules, course sequences and prerequisites are shown in chart form on pages 17 and on.



Guidance counsellors and other school personnel providing educational guidance should acquaint students with the various options keeping in mind the requirements of continuity and sequence.

Each major (with three exceptions; Beauty Culture, Food Services and Health Services) has the equivalent of 35 - 40 credits available in six 5 - credit and one 5 or 10 credit block.

The specific methods used in programming the modules are left to the local school. Two examples will illustrate how schools may differ:

School A - Grade 10 students have a choice of four modules from the Industrial Education 10 course. Two of these modules should be in one field, e.g. mechanics, so that the student has the prerequisite 65 hours for the "22" course.

In grade 11 the students follow through on a major for 10 credits and a minor for 5 in the Industrial Education 22, 32 sequence.

In Grade 12 the students continue with a major for 10 credits and a minor for 5. Such a program in Mechanics could be organized as follows over a three year sequence.

Level 1	Level 2	Level 3
<u>Grade 10</u>	<u>Grade 11</u>	<u>Grade 12</u>
Industrial Education 10	Automotives 22A	Automotives 32A (Major)
- Power Technology	Automotives 22B	Automotives 32B (Major)
(2 modules)	Welding 12 (Minor)	Electricity 12 (Minor)
- Machine Shop		
(1 module)		
- Drafting		
(1 module)		

School B - The students begin at Level One with a module of 5 credits. This is followed by two blocks of 10 credits each in Grades 11 and 12. In Grade 12 they may go into depth by taking an additional 10 credits in their major. Such a program in the field of Mechanics could be organized as follows:

Level 1	Level 2	Level 3
<u>Grade 10</u>	<u>Grade 11</u>	<u>Grade 12</u>
Mechanics 12	Automotives 22A	Auto 22C
	Automotives 22B	Auto 32A
		Auto 32B
		Auto 32C



INDUSTRIAL EDUCATION MATRIX

1. Exploratory Courses	CAREER DEVELOPMENT COURSES				
	2. CAREER FIELD	3. INDUSTRIAL EDUCATION INTRODUCTORY	4. INDUSTRIAL EDUCATION MAJOR	5. INDUSTRIAL EDUCATION MINOR	6. RELATED
Industrial Education and Home Economics at the Junior High School Level.	Visual Communications	Drafting 12 Visual Communications 12 Industrial Education 10	Drafting Graphic Arts Commercial Art	See Charts p.p. Drafting Commercial Art Graphic Art Performing Arts	Work Experience Industrial Ed. Business Ed.
	Mechanics	Mechanics 12  Industrial Education 10  Auto Body 12	Automotives  Aircraft Maintenance  Related Mechanics Auto Body	Welding, Drafting, Machine Shop, Electricity, Auto Body Aircraft Maintenance  Drafting, Welding, Machine Shop, Bldg. Const., Electricity Auto Body, Automotives  Drafting Welding, Sheet Metal, Machine Aircraft Maintenance Automotives	Work Experience Industrial Ed. Business Ed.
	Construction and Fabrication	Industrial Education 10 Buildin. Const. 12  Machine Shop 12  Welding 12  Piping 12  Sheet Metal 12	Building Construction  Machine Shop  Welding  Piping  Sheet Metal	Drafting, Electricity, Sheet Metal, Piping, Machine Shop Welding  Drafting, Welding, Sheet Metal Bldg. Const., Piping, Automotives, Auto Body  Drafting, Machine Shop, Auto, Auto Body, Sheet Metal, Piping Bldg. Construction  Drafting, Bldg. Const., Machine Shop, Welding, Electricity, Sheet Metal Drafting, Bldg. Const., Machine Shop, Welding, Electr., Piping	Work Experience Industrial Ed. Business Ed.
	Electricity-Electronics	Electricity-Electronics 12 Industrial Education 10	Electricity Electronics	Drafting, Automotives, Bldg. Const., Electronics Drafting, Automotives, Bldg. Const., Electricity	Work Experience Industrial Ed.
	Personal Services	Industrial Ed. 10 Beauty Culture 12 Home Economics Fashion & Furnishings Food Preparation Health Services 12	Beauty Culture  Fashion and Furnishings Food Preparation Health Services	Fashion & Furnishings, Health Services, Food Preparation, Visual Communications, Commercial Art  Beauty Culture, Visual Communications, Commercial Art Beauty Culture, Fashion & Furnishings, Health Services, Visual Communications, Commercial Art. Beauty Culture, Food Preparation, Fashion & Furnishings	Work Experience Industrial Ed. Business Ed. Home Economics Arts & Crafts
	Performing Arts		Performing Arts	T.V. Crafts, Drafting, Fashion & Fabrics, Bldg. Const., Drafting, Electricity, Performing Arts, Welding	Work Experience Industrial Ed. Business Ed.
	Horticulture	Horticulture 12 Land and Life	Horticulture	Drafting, Automotives Drafting, Automotives	Work Experience Industrial Ed. Business Ed.

## 2. Student Prerequisites

The following charts indicate the normal prerequisites of a "12" course. In addition to that course, several other entries to the "22" program may be utilized. These are as follows:

1. A student wishing to establish a prerequisite to a 22 course must take two of four modules from a major area in the Industrial Education 10, 20, 30 five credit program.

e.g. Industrial Education 10 (5 credits)

- Power Technology (2 Modules)
- Machine Shop (1 Module)
- Mechanical Drafting (1 Module) gives a prerequisite for a 22 course in Autobody, Automotives, Related Mechanics, or Aircraft Maintenance.

Industrial Education 10 (5 credits)

- Power Technology (2 Modules)
- Materials (2 modules in Welding) gives prerequisite for a 22 course in Autobody, Automotives, Related Mechanics or Aircraft Maintenance plus a prerequisite for a 22 course in Welding.

NOTE: Careful course selection could give the student the option of choosing from two majors at the 22 level, OR

2. A student wishing to establish a prerequisite to a 22 course may take one half of two 12 courses.

e.g. Industrial Education 10 (5 credits)

- $\frac{1}{2}$  Beauty Culture 12 course, PLUS  
 $\frac{1}{2}$  Fashion and Furnishings 12 course gives a prerequisite for a Beauty Culture 22 course and for a Fashion and Furnishings 22 course.

NOTE: Careful course selection could give the student the option of choosing from two majors at the 22 level.

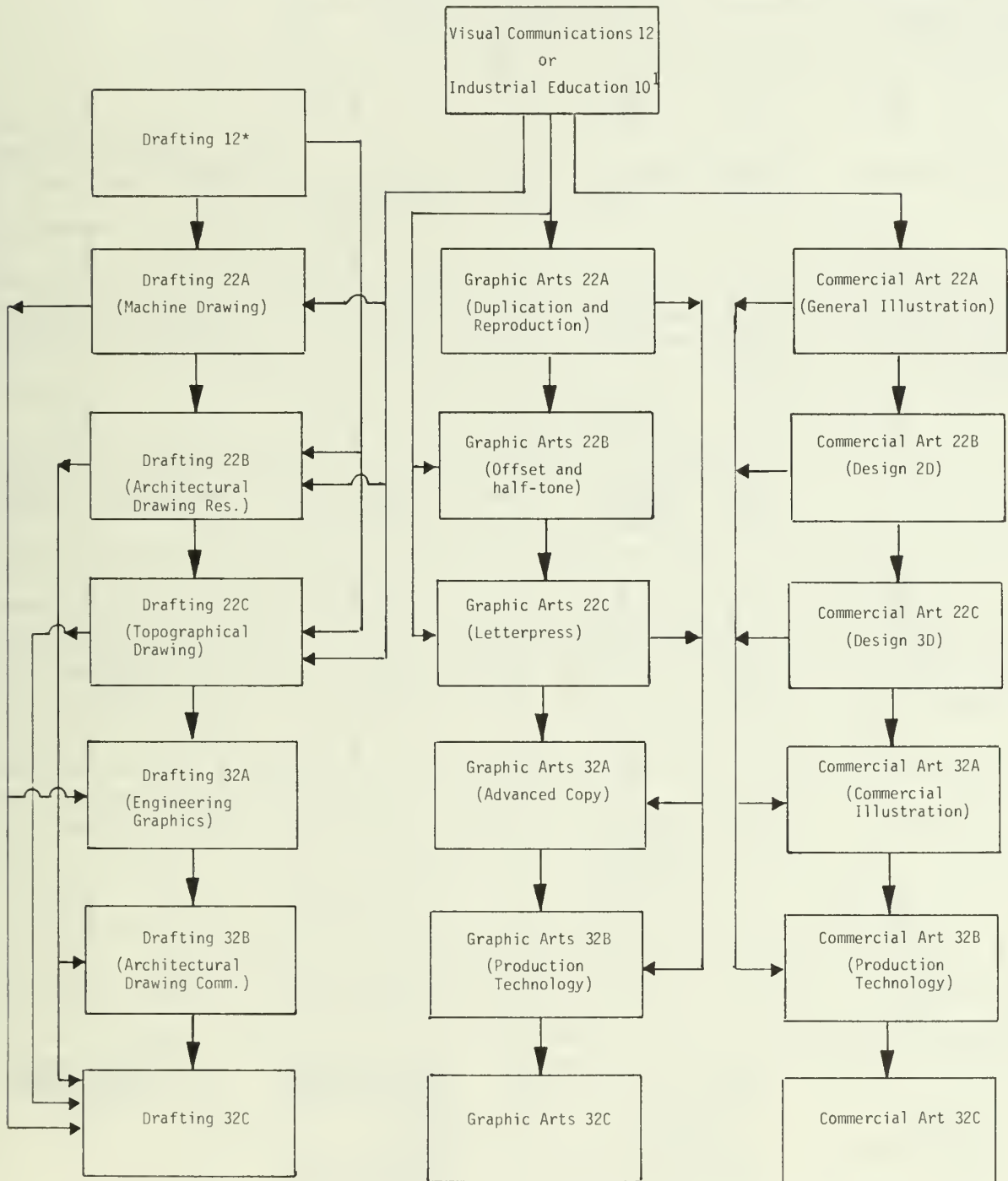
Career Field - VISUAL COMMUNICATIONS

MAJORS

DRAFTING

GRAPHIC ARTS

COMMERCIAL ART



MINORS RELATED TO DRAFTING

Building Construction  
Machine Shop  
Electricity-Electronics  
Welding  
Sheet Metal  
Piping  
Graphic Arts  
Commercial Art  
Forestry  
Aircraft Maintenance  
Automotives

MINORS RELATED TO GRAPHIC ARTS

Drafting  
Commercial Art  
\* or Drafting 10 (5CR)

MINORS RELATED TO COMMERCIAL ART

Drafting  
Graphic Arts  
Performing Arts

Career Field - MECHANICS

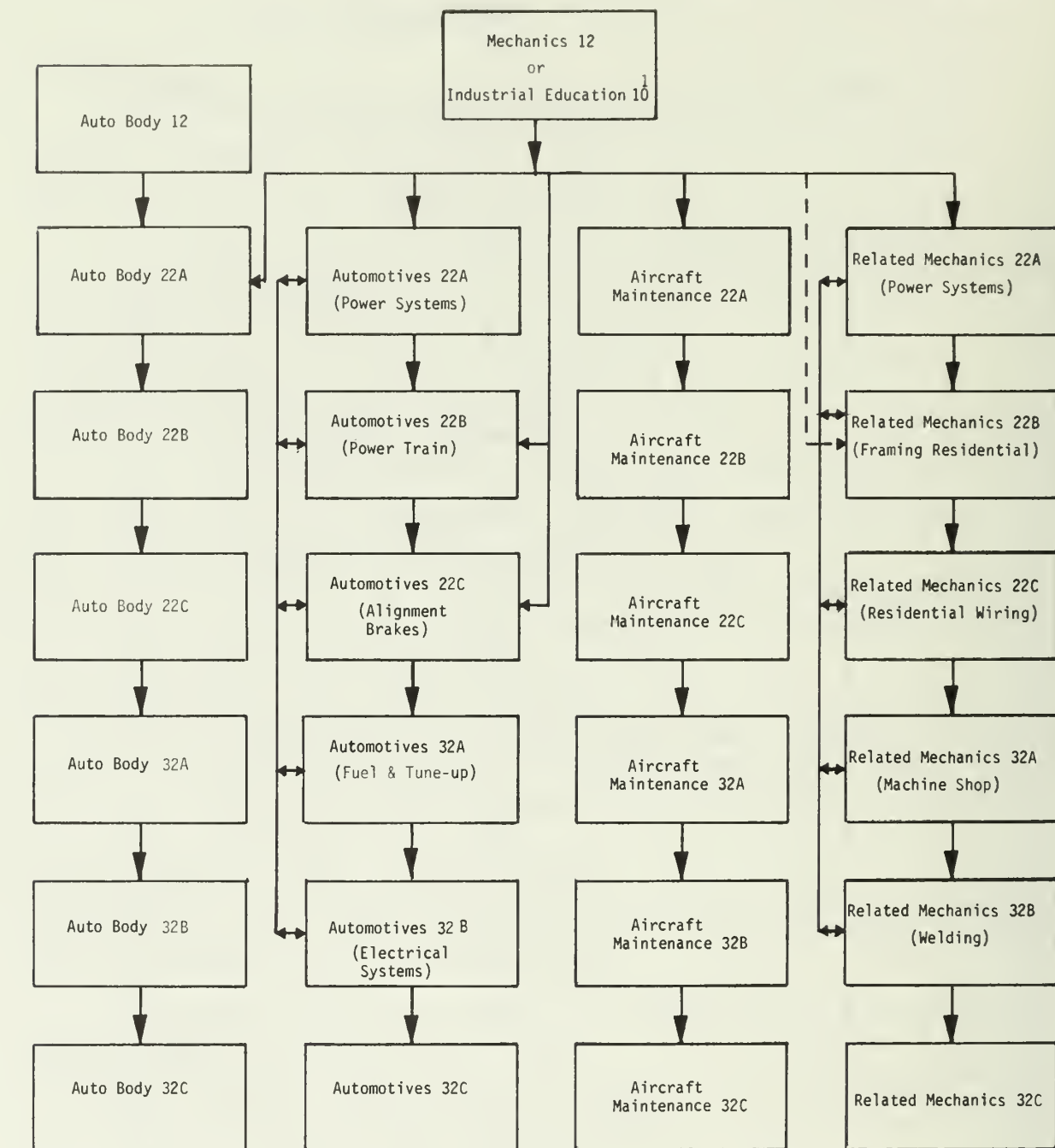
MAJORS

AUTO BODY

AUTOMOTIVES

AIRCRAFT MAINTENANCE

RELATED MECHANICS



MINORS RELATED TO AUTO BODY

Welding  
Sheet Metal  
Machine Shop  
Aircraft Maintenance  
Automotives

MINORS RELATED TO AUTOMOTIVES

Welding  
Drafting  
Machine Shop  
Electricity  
Auto Body  
Aircraft Maintenance

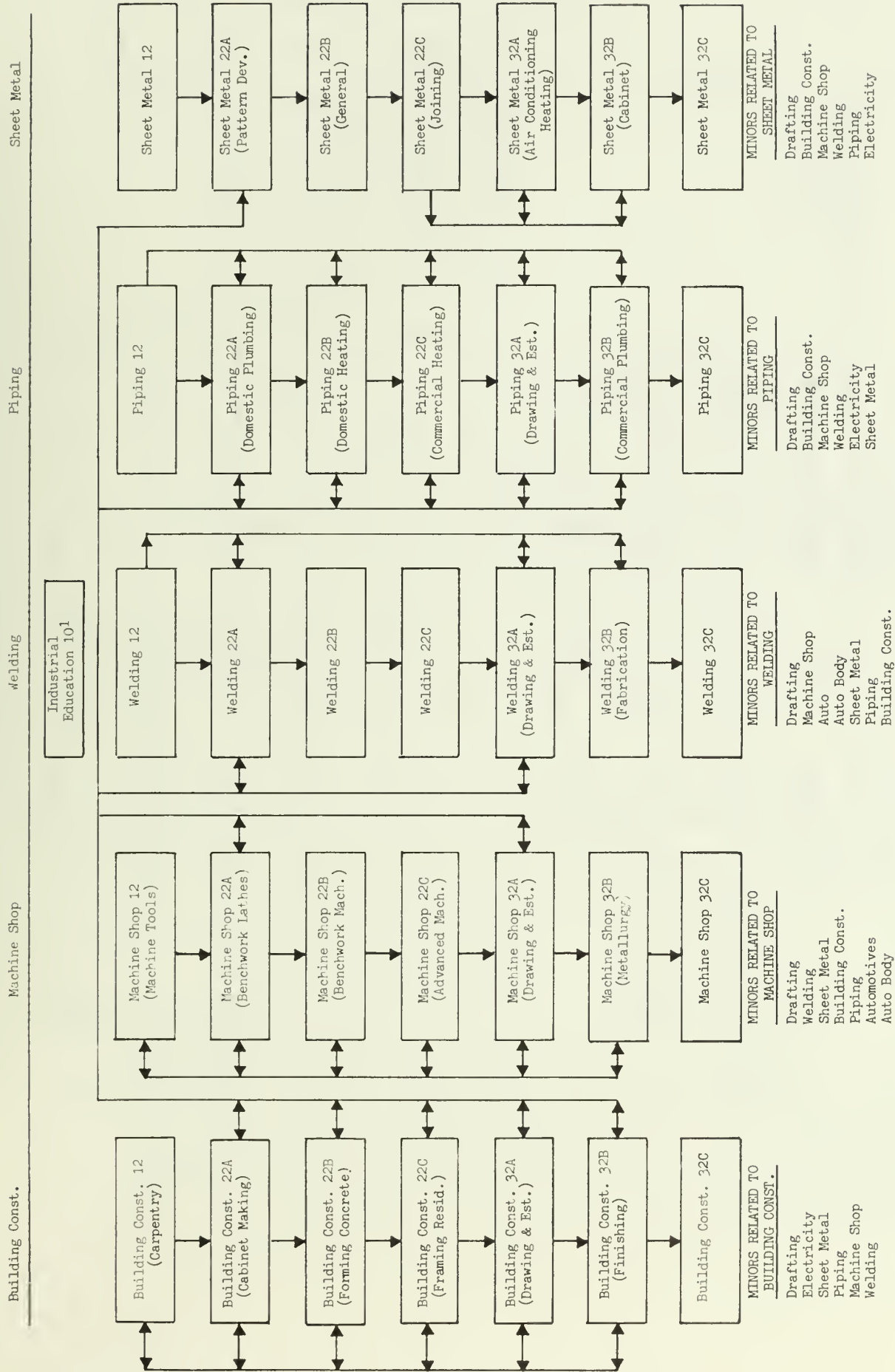
MINORS RELATED TO  
AIRCRAFT MAINTENANCE

Drafting  
Welding  
Machine Shop  
Building Construction  
Electricity  
Auto Body

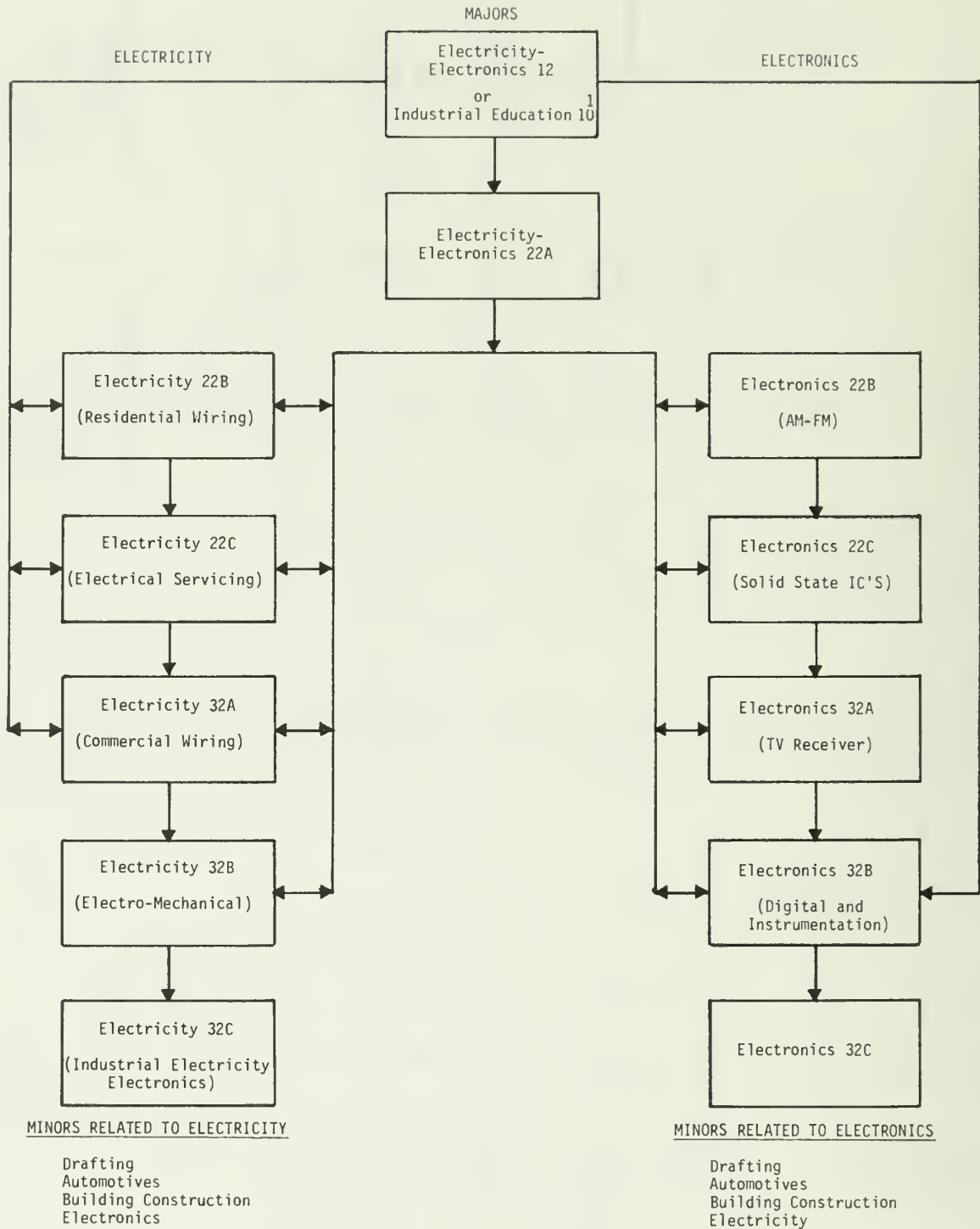
MINORS RELATED TO  
RELATED MECHANICS

Drafting



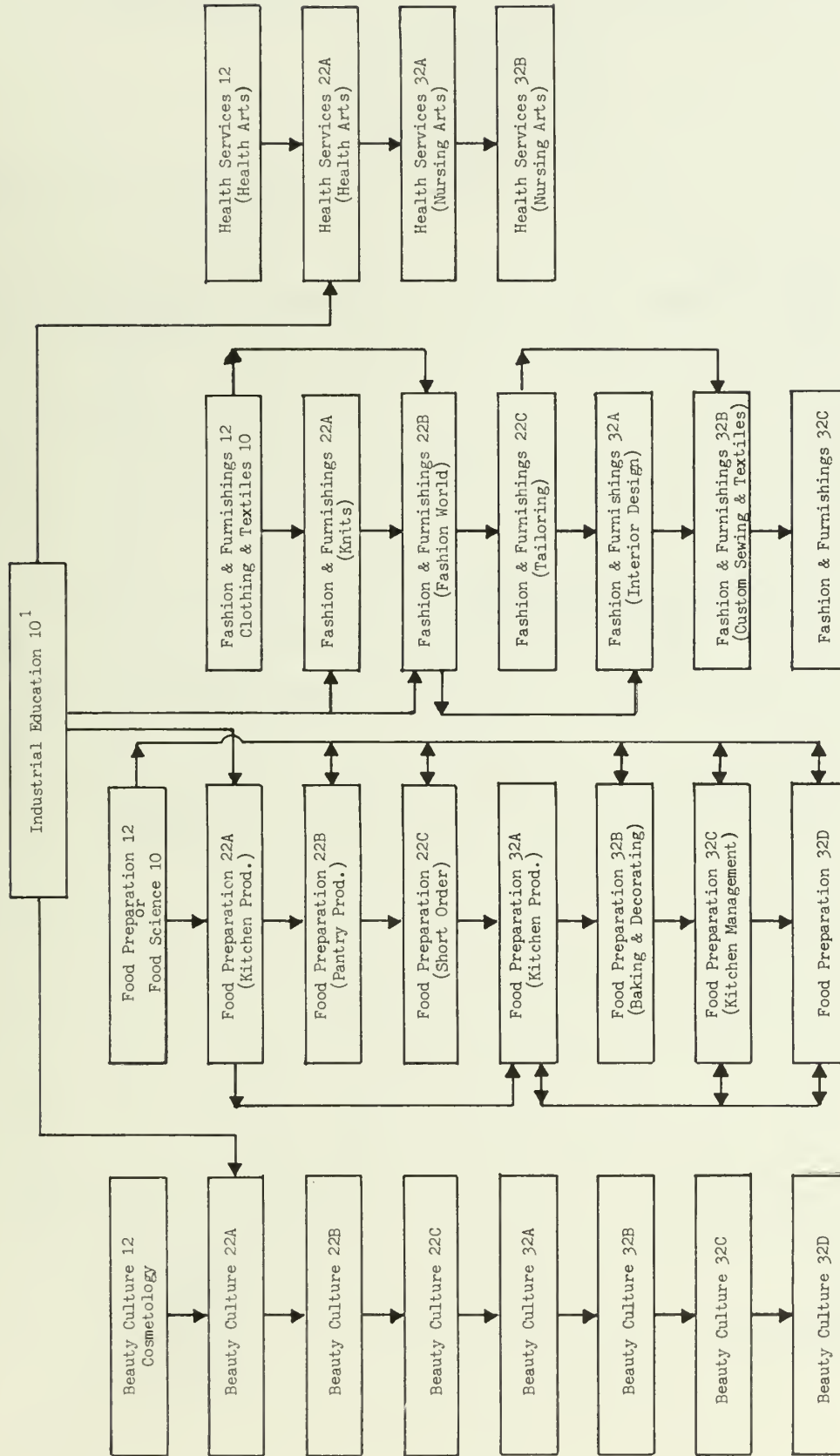


Career Field - ELECTRICITY-ELECTRONICS



# CAREER FIELD - PERSONAL SERVICES

## MAJORS



### MINORS RELATED TO BEAUTY CULTURE

Health Services  
Food Preparation  
Fashion & Furnishings  
Visual Communications  
Commercial Art  
Performing Arts

### MINORS RELATED TO FOOD PREPARATION

Beauty Culture  
Fashion & Furnishings  
Health Services  
Visual Communications  
Commercial Art

### MINORS RELATED TO FASHION AND FURNISHINGS

Beauty Culture  
Food Preparation  
Health Services  
Visual Communications  
Commercial Art  
Performing Arts

### MINORS RELATED TO HEALTH SERVICES

Beauty Culture  
Food Preparation  
Fashion & Furnishings

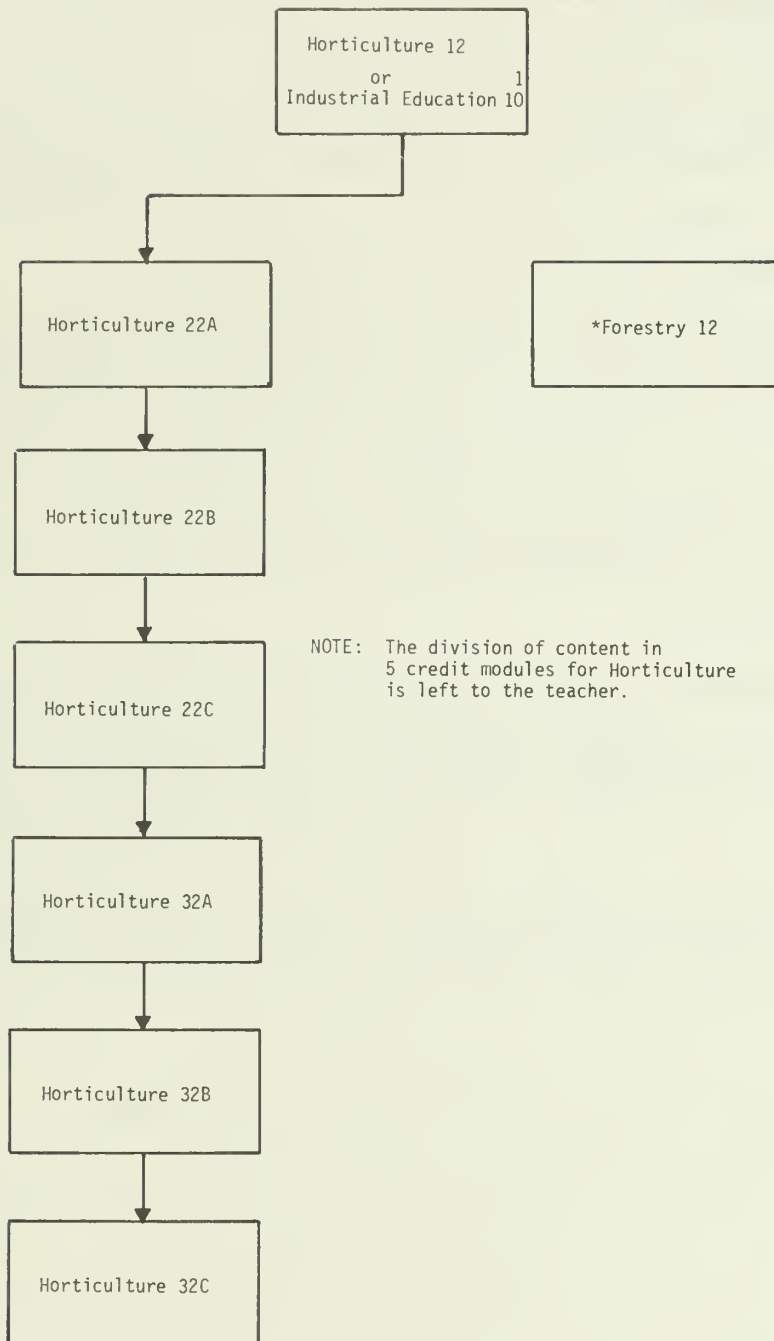
Drafting  
Electricity-  
Electronics  
Building Construction  
Commercial Art  
Welding  
Fashion & Furnishings  
Performing Arts

Career Field - HORTICULTURE

MAJORS

HORTICULTURE

\*FORESTRY



MINORS RELATED TO HORTICULTURE

Drafting  
Automotives

\*Forestry will be replaced by the course "Land and Life."



### 3. Articulation

#### a. Recognition of Alberta Vocational High School Subjects by the Institutes of Technology and Community Colleges

Advance credit may be granted by an institution on the basis of successful completion of a high school vocational program (Business or Technical) and/or obtaining a passing grade on an institution-administered entrance examination.

Because of the necessity of arranging for individualized programs, a student wishing to take advantage of these articulation provisions must write to the Registrar of the Institute of Technology or Community College by April 15, giving details of the high school program completed and stating the post-secondary program he/she is interested in. The institutions involved will communicate with students regarding specific information.

#### b. Articulation with the Alberta Apprenticeship Program

Some Vocational High School Programs are similar in scope to the junior periods of some apprenticeship programs. In particular, similarities prevail between:

Building Construction and Carpenter Apprenticeship  
Electricity and Electrician Apprenticeship  
Pipe Trades and Plumber Apprenticeship  
Pipe Trades and Steamfitter Apprenticeship  
Automotives and Motor Mechanic Apprenticeship  
Auto Body and Auto Body Mechanic Apprenticeship  
Sheet Metal and Sheet Metal Mechanic Apprenticeship  
Machine Shop and Machinist Apprenticeship  
Electronics and Radio Technician Apprenticeship  
Electronics and Communication Electrician Apprenticeship  
Appliance Servicing and Appliance Serviceman Apprenticeship

Welding and Welder Apprenticeship  
Food Preparation and Cook Apprenticeship  
Beauty Culture and Beautifican Certification

a. A person who presents to Apprenticeship authorities of Alberta Advanced Education and Manpower one hundred High School credits, including at least 35 credits in one of the above High School Programs (excepting beauty culture) and an acceptable application for apprenticeship in the corresponding apprenticeship program, may be granted apprenticeship credits on the following basis:

(i) For Building Construction, Electricity, Pipe Trades, Automotives, Auto Body, Sheet Metal, Machine Shop, Electronics - upon recommendation of employer, one year of time credit (3 months shortening of each of four 12-month periods) and First and Second Period Technical credit upon passing the examinations for these periods.

(ii) For Appliance Servicing and Agricultural Mechanics - credits by evaluation of credentials; as "block" apprenticeship training is offered in these trades.

(iii) For Electronics into the Communication Electrician apprenticeship - credits arranged by evaluation of credentials by the trade Advisory Committee, as there are four "craft" areas in the apprenticeship program beyond the first period level.

(iv) For Welding and Food Preparation - upon recommendation of employer, one year of time credit (4 months shortening of each of three 12-month periods) and First Year Technical credit upon passing the First Year examination.

b. A person who presents fewer than 100 High School credits with a minimum of 35 credits in one of the above named Vocational programs, or a person who presents 100 High School credits with fewer than 35 credits in one of the above Vocational programs, may expect to be considered for lesser apprenticeship credit on the basis of individual performance upon undertaking apprenticeship.

c. A person who presents proof of 1,400 hours of scheduled instruction in Beauty Culture in a Vocational High School is eligible for the examination for the Certificate of Proficiency as a Beautician, provided that instruction is given by a certificated Beautician. Persons who complete fewer than 1,400 hours of scheduled instruction may fulfill the requirements in a private Beauty Culture school as a student or in a Beauty Culture salon as a registered apprentice.

NOTE: Information about apprenticeship programs is contained in the Brochure "Apprenticeship Opportunities" - available from the Apprenticeship and Tradesmen's Qualification Regional Offices at:

Parkside Office Building  
10924 - 119 St.  
EDMONTON

305 Professional Building  
4808 - Ross Street  
RED DEER

6th Floor - Alberta Place  
1520 - Fourth Street S.W.  
CALGARY

206 Provincial Bldg.  
GRANDE PRAIRIE

Administration Building  
Ninth St. & Third Ave. N.  
LETHBRIDGE

Offerein Building  
9912A Franklin Ave.  
FORT McMURRAY





## V. DESCRIPTION OF COURSES

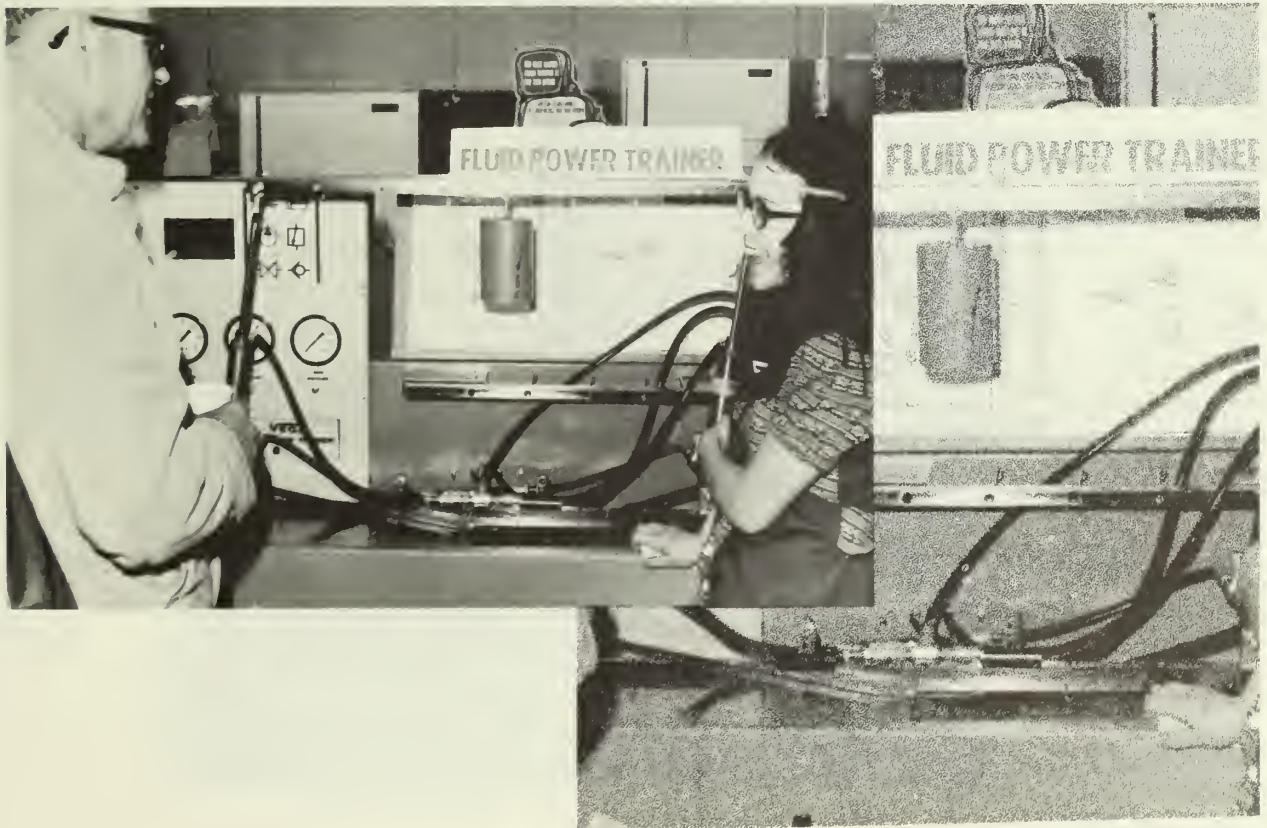
### 1. INDUSTRIAL EDUCATION 10, 20 and 30

Industrial Education 10, 20, 30 is a program consisting of fifty-six one-credit modules. Each module may be taught for a minimum of 25 hours to a maximum of 33 hours. This allows a school some flexibility in organizing a 4-5 credit course utilizing their labs to advantage. Also it provides the necessary time for a student to get the prerequisite for a "22" course by taking two modules of 33 hours each.

The chart on page 13 shows how the modules can be classified into career fields. Programming can be done vertically by selecting modules from a single field or horizontally by selecting modules from many fields.

In a multiple activity laboratory, a course will likely consist of modules selected from three or four fields.

The Industrial Education 10, 20, 30 program can be integrated with the "22" program or can be used to provide students with more indepth experiences than were possible through their junior high school orientation program.





A. ELECTRICITY-ELECTRONICS-COMPUTER

1. Electricity

The content of this module introduces the student to basic electrical theory, control of the power of electricity, and basic tool and instrument use.

2. Electronics

In addition to basic theory students will begin to unravel the mystery of electronics by using test instruments and electronic devices.

3. Power Supplies

Using laboratory facilities and time the students will build a power supply to convert AC to DC.

4. Amplifiers

This module will provide the content for students to understand the theory of amplification and to assemble an amplifier.

5. Audio

Students learn about various audio systems and how they are assembled.

6. Servicing

Students will be taught how to use appropriate instruments in a logical sequence to determine apparatus failure.

7. Radio

The students should become familiar with the actual workings of radio system(s) through practical activities.

8. Television

The students should become familiar with the actual workings of a television system(s) through practical activities.

9. Logic Circuits

This module will help the students progress from basic concepts of digital electronics to the more sophisticated circuitry by actual hands-on involvement.

10. Computer

This module will give the students an introductory course in computer organization, operation and programming.

11. Electric Wiring

The students will be taught basic wiring circuits so that they can properly terminate various devices normally found in residential wiring.

12. Design and Construction

This module will give the students the opportunity to study the importance of planning, organization and quality control as they assemble their own project from their own layout.



## B. MODULES

### 1. General Woods

Content includes the safe use of tools and basic shaping and joining of wood.

### 2. Building Construction 1

Simple framing and safe tool use are studied and practiced.

### 3. Building Construction 2

The Canadian code is applied to construction. The correct procedures for building a house from basement to roof are studied.

### 4. Cabinet 1

Safe use of tools and equipment is taught while performing exercises in shaping and joining parts of wood projects. Basic joining is practiced.

### 5. Cabinet 2

Content includes procedures and practices used in building box furniture, kitchen cabinets and finishing methods.

### 6. General Metals

This module provides students with exploratory experiences in a number of metal forming and fabricating processes. Both hand and machine tools are used.

### 7. Sheet Metal

Students learn how to make simple layouts, the use of shearing tools, forming methods and how to assemble and fasten the parts of sheet metal projects.

### 8. Machine Shop

This module introduces the student to the machine lathe, drill, grinder and shaper. Correct procedures are taught for setting up and making basic cuts.

### 9. Welding Arc

Students learn how to set the welder for various type of rods and metal weights. Basic techniques and welding forms are practiced.

10. Welding Gas

The content includes safe procedures for setting up the equipment and making adjustments. Basic oxy-acetylene procedures and techniques are practiced.

11. Foundry

This module will give the student an opportunity to try the different processes involved in foundry from pattern making to finishing a casting.

12. Plastics 1

The first module in plastics deals with cutting, finishing and assembling plastic products as well as the construction of molds and using them to form plastics.

13. Plastics 2

The second module in plastics deals with plastics forming and fabricating techniques as they relate to the plastics industry.

14. Earths-Ceramics

Students learn about the manufacture of clay products and practice forming clay products using both hand and molding procedures.

15. Earths-Concrete

Students learn about the mixing of concrete and forming methods. They practice placing, finishing, curing, reinforcing and coloring concrete.

15. Textiles

Students will learn how to select fabrics for various purposes; how to select and care for clothing and how to construct several simple projects from fabrics.

17. Foods

Students learn about safety and sanitation in the kitchen; how to prepare a simple meal and the principles of meal preparation with reference to nutrition and costs.



C. POWER TECHNOLOGY MODULES

1. Conventional Heat Engines

Students study and operate several internal and external combustion engines to learn about safety procedures, efficiency, control and energy utilization.

2. Small Engine Tune-Up and Troubleshooting

Students work with small engines learning about basic operating principles, tool use, adjustments and minor repairs.

3. Small Engine Overhaul

This is a continued study of small engines. Proper procedures for troubleshooting, systems analysis and component replacement are taught.

4. Automobile Care

This module covers the major systems in the automobile, safety, insurance, maintenance, and environmental and social implications.

5. Automobile Tune-Up

Students identify engine parts and use tools and instruments to tune up an engine. Ignition and carburation are studied.

6. Mechanical Systems

This module provides the student with the experience of dismantling and re-assembling various mechanical systems to determine operating principles.

7. Electro-mechanical Controls and Troubleshooting

Students study conversion and control of energy as it applies to electric starters, generators and alternators. Safety and problem solving techniques are stressed.

8. Electrical Systems

Content includes the production of electricity, amplification control and transmission. Ignition of both single cylinder and multiple engines will be studied.

9. Non-Conventional Power Sources

Others sources of energy such as solar, chemical, wind, etc. are studied.

10. Appliance Repair and Troubleshooting

Students will learn troubleshooting procedures as they repair typical appliance faults.

11. Hydraulics and Fluidics

Students will assemble, operate and analyze different hydraulic systems and learn about efficiency of energy transfer.

12. Pneumatics and Fluidics

Students design a simple logical control system and assemble, operate and analyze several different pneumatic systems.



D. VISUAL COMMUNICATIONS MODULES

1. Principles of Lithography

Content includes basic principles of the lithographic process, simple layouts, making masters and offset press operation.

2. Line Photography

Students use the process camera to do line photography and prepare orthochromatic film to make metal masters.

3. Black and White Photography

Content includes the study of cameras, light sensitive materials and enlarger work.

4. Color Photography

Students study principles of color photography, properties of color film and techniques of development.

5. Screened Photography

This is a continued study of process camera operation, stripping and platemaking. The module on line photography should precede this one.

6. Layout and Design

Students will develop skill in layout and commercial art techniques.

7. Offset Printing Production

Students plan a production run of a printed product and in the process learn about: systems analysis, quality control, offset production, deadlines, wastage and consumer acceptance.

8. Mechanical Drafting

Basic drawing concepts are introduced to produce product representations through various projection methods. Students learn to use and take care of instruments.

9. Topographical Drafting

Students draw contour maps and learn how to use various projections and how to do dimensioning.

10. Architectural Drawing

This module introduces the student to reading and drawing building plans. Housing standards are studied.

11. Relief Printing

Principles of relief printing will be studied and applied to hand setting type and the use of a small platen press, sign press and rubber stamp machine.

12. Printmaking Techniques

Students will learn how to handout prints as well as use the photographic process for making prints. They will learn how to construct and use their own equipment.



## E. GENERAL MODULES

### 1. Research

The research module is intended for individual student use.

It provides a 25 hour module to allow a student to expand on an interest related to the Industrial Education program.

### 2. Developmental

Content in Industrial Education is constantly changing. This module is intended for teachers' use in developing new areas of knowledge not attended to by the current curriculum in Industrial Education. Teachers intending to develop and experiment with new content should discuss this with one of the provincial Industrial Education Consultants before exposing students to it.

### 3. Production Science

This module provides a 25 hour block of time to set up a simulated industrial experience. The concepts can be drawn from the Production Science 30 course which is a much expanded version of the same processes.





## 2. INDUSTRIAL EDUCATION 12, 22, 32 COURSE DESCRIPTIONS

Industrial Education 12, 22, 32 is a program made up of five credit modules. The sequencing of these modules is fairly flexible, but should be in conformity with the charts on pages 17 to 23.

Students who fail a prerequisite module cannot go on in the course until it is completed satisfactorily.

While these modules are vocational in content, students still have a choice as to the number they wish to complete. However, to take full advantage of the Apprenticeship Articulation thirty five (35) credits must be completed.

### A. VISUAL COMMUNICATIONS

The career field of Visual Communications includes: drafting, graphic arts and commercial art. Students may build a program by selecting appropriate modules from the various areas or concentrate on one.

#### a. Drafting

##### (i) Drafting 12 (1864)

An introductory course which develops basic skills in the use and care of instruments, sketching, lettering, pictorial drawing, orthographic drawing, dimensioning and career information.

##### (ii) Drafting 22A (Machine Drawing) (2864)

The course concentrates on machine drawing, shape descriptions, fastening methods and working drawings.

##### (iii) Drafting 22B (Architectural Drawing) (2865)

An introduction to architectural drawing dealing with design, materials, building standards and working drawings.

##### (iv) Drafting 22C (Topographical Drawing) (2866)

This course in topographical drawing introduces the students to surveying, photogrammetry, interpretation of field notes and photographs, map drawing, symbols and map projections.

(v) Drafting 32A (Engineering Graphics) (3864)

Engineering graphics develops the concepts learned in machine drawing (22A). Activities include multi-view drawings, auxiliary views, descriptive geometry, vector geometry, industrial systems, power transmission systems, and white printing.

(vi) Drafting 32B (Architectural Drawing) (3865)

This is the second course in architectural drawing with emphasis on the design of light commercial facilities.

(vii) Drafting 32C (3866)

This course consists of content taken from related fields such as construction and fabrication to provide the student with practical activities related to his drafting.

b. Graphic Arts

(i) Visual Communications 12 (1736)

Visual Communications is a course common to the three major areas in the career field. Students will learn about occupational opportunities, basic drawing, composition and design, color theory, lettering, advertising layout, photography, platemaking, printing and finishing procedures.

(ii) Graphic Arts 22A (Duplication and Reproduction) (2904)

The course explores the areas of offset printing, platemaking, photography, silkscreening, and binding techniques.

(iii) Graphic Arts 22B (Offset Line and Half-tone) (2905)

In this course advanced work is done: lithography, photography, copy preparation, film processing, plate making and offset printing.

(iv) Graphic Arts 22C (Letterpress) (2906)

The course includes: layout work for printing, letterpress printing and bindery.

(v) Graphic Arts 32A (Advanced Letterpress and Offset) (3904)

Advanced work is performed in design, make up, production and bindery operations.

(vi) Graphic Arts 32B (Production Technology) (3905)

Students use all the experiences gained through previous work to organize and operate as a small printing industry. They will learn about the interdependence of men, machines and materials, division of labour, personnel organization, research and development, and the problems faced by people in an actual production operation.

(vii) Graphic Arts 32C (3906)

Through this course students may increase their competencies in areas covered previously, or engage in actual graphic arts work in industry under the supervision of the Graphic Arts teacher and a journeyman on the job.

c. Commercial Art

(i) Visual Communications 12 (1736)

Visual Communications is a course common to the three major areas in the career field. Students will learn about occupational opportunities, basic drawing, composition and design, color theory, lettering, advertising layout, photography, platemaking, printing, and finishing procedures.

(ii) Commercial Art 22A (General Illustration) (2848)

An introduction to drawing and illustration as applied to commercial assignments. The course includes constructive drawing (forms, perspective, etc.), expressive drawing, (mature studies, human form, etc.) and an introduction to various painting techniques.

(iii) Commercial Art 22B (Information Design) (2849)

An introduction to the elements and principles of design as applied to two-dimensional design such as advertising layout and lettering.

(iv) Commercial Art 22C (Design 3D) (2850)

The content of this module stresses the techniques of advertising, design, lettering and merchandising.

(v) Commercial Art 32A (Commercial Illustration) (3848)

This course is a continuation of the 22B with more advanced study of drawing and illustration in three-dimensional design using various materials to create models for display on commercial assignments.

(vi) Commercial Art 32B (Production Technology) (3849)

Students use all the experience gained through previous work to organize and operate a small advertising firm. They will learn about the problems of labor, personnel organization, marketing and the actual production operation.

(vii) Commercial Art 32C (3850)

Through this course students may increase their competencies in areas covered previously by doing additional work in the school or by engaging in actual art work for a commercial firm. Students must be under the supervision of the Commercial Art teacher and a craftsman on the job.

B. MECHANICS

The career field of Mechanics includes automotives, auto body, aircraft maintenance and related mechanics. Students may build a program by selecting modules from one or more of the areas.

a. Auto Body

(i) Auto Body 12 (1816)

An introductory course which includes activities in occupation and safety studies, use of tools and processes in body work, welding and painting.

(ii) Auto Body 22A (2816)

Activities include estimating damage, alignment, welding and metal finishing.

(iii) Auto Body 22B (2817)

Students learn to use terms of the trade, explain operations, examine shop design, do more advanced work in alignment, jacking, welding and door repairs.

(iv) Auto Body 22C (2818)

Management problems are studied. Activities include: metal cutting, brazing, welding, bumper repair, frame repair, repairing dents and painting (practice panel).

(v) Auto Body 32A (3816)

Advanced work is done in assessing damage, writing up estimates, spray painting, fitting components and metal finishing.

(vi) Auto Body 32B (3817)

Advanced work is continued in management, painting frame alignment and welding.

(vii) Auto Body 32C (3818)

Students may increase their skills by shop practice in the school or on the job training in an auto body shop. The student must be supervised by the Auto Body teacher as well as by a journeyman on the job.

b. Automotives

(i) Mechanics 12 (1746)

Mechanics 12 is an introductory course leading to all the major areas in the career field of mechanics. Students are introduced to power sources and methods of transmission. They study the concepts of work, energy and power and engage in the activities of testing, disassembly and assembly of machines, reading, research and applying information learned to analyzing and repairing minor engine problems.

(ii) Automotives 22A (Power Systems) (2824)

This course combines theory and practice in the maintenance and repair of the internal combustion engine. Activities include procedures in problem analysis, disassembly, repair and assembly.

(iii) Automotives 22B (Power Train) (2825)

Theory, practice and service are studied as related to the power train components of clutches, transmission, drive line, rear axle and introduction to automatic transmission.



(iv) Automotives 22C (Alignment and Brakes) (2826)

Theory and service are practiced as related to wheel alignment, brakes, tires and shock absorbers.

(v) Automotives 32A (Fuel and Tune-up) (3809)

This course is a study of the fuel, ignition and exhaust systems, their components, analysis and tune-up.

(vi) Automotives 32B (Electrical Systems) (3810)

Theory includes basic electricity and magnetism, sources of electrical energy and its application to the automobile.

(vii) Automotives 32C (3811)

Students may increase their competencies in any of the major areas of study previously taken by more school shop practice or may train on the job under the supervision of the Automotives teacher and a journeyman.

c. Aircraft Maintenance

(i) Mechanics 12 (1746)

Described under Automotives, page 36.

(ii) Aircraft Maintenance 22A (2804)

Basic aeronautical theory, aircraft woodwork, fabric covering, aircraft metals and plastics are studied and practiced.

(iii) Aircraft Maintenance 22B (2805)

The course includes: aircraft sheet & bench metal work, welding.

(iv) Aircraft Maintenance 22C (2806)

The course includes flight controls and rigging, weight and balance, and aircraft systems (fuel, oxygen, ventilation, de-icing, pressurization, hydraulics, brakes)

(v) Aircraft Maintenance 32A (3804)

Aircraft power plants, propellers and electrical systems studied.

(vi) Aircraft Maintenance 32B (3805)

The course includes: aircraft engine overhaul and testing, inventory and records, overhaul manual.

(vii) Aircraft Maintenance 32C (3806)

Advanced work may be done in the school shop on topics covered previously or the student may train on the job under the supervision of the Aircraft Maintenance teacher and a journeyman at the place of work.

d. Related Mechanics

Related Mechanics is a program designed to meet the needs of students planning careers in the agricultural sector of the Alberta economy. Entry into the program is through Mechanics 12 or Ind. Ed. 10.

(i) Mechanics 12 (1746)

Described under Automotives, page 38.

(ii) Related Mechanics 22A (Power Systems) (2809)

This course combines theory and practice in the maintenance and repair of the internal combustion engine.

(iii) Related Mechanics 22B (Building Construction) (2810)

A study is made of materials and methods of construction used for erecting frame buildings such as a granary, barn, garage or house. Activities include the uses hand and power tools in the construction of a frame building.

(iv) Related Mechanics 22C (Electricity) (2811)

This course is a study of the theory and application of electricity to residential wiring.

(v) Related Mechanics 32A (Machine Shop) (2309)

Students will learn to use the basic machine and hand tools required to shape metal as required in the repair and maintenance of farm machinery.

(vi) Related Mechanics 32B (Welding) (3810)

This course includes the theory and practice of both oxy-cetylene and electric arc welding.

(vii) Related Mechanics 32C (3811)

Advanced study may be continued of any of the topics covered in the courses listed under related mechanics or on the job training under the supervision of the Related Mechanics teacher and a journeyman on the job.

## C. CONSTRUCTION AND FABRICATION

The career field of Construction and Fabrication includes: building construction, machine shop, welding, piping, and sheet metal.

### a. Building Construction

#### (i) Building Construction 12 (Carpentry) (1836)

This introductory course provides theory and practice in the use of hand and power tools, planning and design, and materials. Students will have an opportunity to make projects related to the theory.

#### (ii) Building Construction 22A (Cabinet Making) (2836)

This is a course in cabinet and furniture construction. The theory and practice emphasize design, materials, tools and processes.

#### (iii) Building Construction 22B (Concrete and Form Construction) (2837)

The course deals with concrete as a material of construction and relates theory to practice in design, form construction and concrete replacement.

#### (iv) Building Construction 22C (Residential Framing) (2838)

The course outlines the theory and practices used in framing a house. Students may frame a small building.

#### (v) Building Construction 32A (Sketching, Blueprint Reading and Estimating) (3836)

The course provides a detailed list of activities in sketching, drawing, describing and estimating the costs of materials, labor and overhead in constructing a building.

#### (vi) Building Construction 32B (Exterior and Interior Finishing) (3837)

The course provides theory and practice in selecting materials, tool use, design and construction methods for windows, doors, roof, eaves, interior and exterior trim, stair construction and finishing with paints and varnishes.

(vii) Building Construction 32C (3838)

Students may pursue any of the topics in previous courses in greater depth or take further training on the job under the supervision of the Building Construction teacher and a journeyman.

b. Machine Shop

(i) Machine Shop 12 (1936)

The course provides theory and practice in: layout and bench work, operation of the lathe, shaper, drill press, power saw and grinder. It gives an introduction to metallurgy.

(ii) Machine Shop 22A (Benchwork, Lathe) (2936)

This course provides theory and practice in the safe use of hand tools, lathe, drill press and grinder to shape metal by removal.

(iii) Machine Shop 22B (Benchwork, Machines) (2937)

This course continues from the experience in 22A with the theory and practice of advanced lathe work, the introduction of the milling machine and shaper.

(iv) Machine Shop 22C (Advanced Machinery) (2938)

Content and practice advance to precision measuring and machining, cutting threads, tapers, keyways, gear cutting and heat treating.

(v) Machine Shop 32A (Drawing, Sketching and Blueprint Reading) (3936)

Students are given theory and practice related to the use of drawing instruments, orthographic and oblique projections, freehand sketching and obtaining technical information.

(vi) Machine Shop 32B (Metallurgy) (3937)

This course provides theory and practice in metal identification, composition, production and metalworking processes.

(vii) Machine Shop 32C (3938)

Students may pursue any of the topics listed in greater depth or take further training on the job under the supervisor of the Machine Shop teacher and a journeyman on the job.

c. Welding

(i) Welding 12 (1980)

The course deals with occupational information, safety, and the theory and practice of arc and oxyacetylene welding.

(ii) Welding 22A

Practice is given in both oxyacetylene and electric arc welding utilizing exercises, repair work and projects.

(iii) Welding 22B (2982)

A continuation of skill development.

(iv) Welding 22C (2982)

Advanced work is given in special electric arc applications such as welding non-ferrous metals, hard surfacing and specialty welding.

(v) Welding 32A (Drawing, Estimating, and Metallurgy) (3980)

Basic drafting techniques are practiced as they relate to welding and the properties, classification and testing of metals studied.

(vi) Welding 32B (Fabrication and Repair)

The course emphasizes design, fabrication and repair.

(vii) Welding 32C (3982)

Students may develop skills at the school through in-depth studies or engage in training on the job in a welding shop under the supervision of the Welding teacher and a journeyman welder.

d. Piping

(i) Piping 12 (1949)

The course gives theory and practice in safety measurement and layout, joining pipe, fittings and valves. Occupational opportunities and qualifications are studied.



(ii) Piping 22A (Domestic Plumbing) (2949)

The course gives the theory and practice necessary to plumb a house.

(iii) Piping 22B (Domestic Heating) (2950)

The course consists of the study of hot water heating, installing gas lines and servicing gas controls.

(iv) Piping 22C (Commercial Heating) (2951)

Systems used in commercial heating and methods of installation are studied.

(v) Piping 32A (Shop Drawing, Sketching, Estimating and  
Reading Blueprints) (3949)

Plans for a plumbing installation are drawn using correct lines and symbols complete with the estimate of the cost.

(vi) Piping 32B (Commercial and Industrial Plumbing) (3950)

The course relates theory and application of the plumbing code to roughing in and setting the fixtures on a job.

(vii) Piping 32C (3951)

Advanced work on topics covered may be continued in the school shop or the student may engage in training on the job under the supervision of the Piping teacher and a journeyman.

e. Sheet Metal

(i) Sheet Metal 12 (1968)

Sheet Metal 12 is an introduction to the career of sheet metal worker, qualifications required and work organization. Theory and practice is given in layout, cutting, forming and pattern development.

(ii) Sheet Metal 22A (Pattern Development) (2968)

This course emphasizes the theory and application of the principles of sheet metal layout.

(iii) Sheet Metal 22B (General Sheet Metal Work) (2969)

The fabrication of rectangular, cylindrical and conical objects provide the activities of this course.

(iv) Sheet Metal 22C (Joining) (2970)

Content includes: mechanical joining methods, adhesive and cohesive methods, with practice in all.

(v) Sheet Metal 32A (Air Conditioning and Residential Heating) (3968)

A complete study is made of an air conditioning and a heating system.

(vi) Sheet Metal 32B (Cabinet Work) (3969)

Students fabricate furniture or fixtures made of sheet metal.

(vii) Sheet Metal 32C (3970)

Advanced work may be engaged in at the school or a student may train on the job under the supervision of the Sheet Metal teacher and a journeyman in the trade.

D. ELECTRICITY - ELECTRONICS

The career field of Electricity - Electronics includes electricity and electronics. Students may select courses from either area, within the restraints of prerequisites to build a program.

a. Electricity - Electronics

(i) Electricity - Electronics 12 (1731)

This course introduces concepts basic to the whole field of electricity - electronics. It deals with: occupational information, safety, nature of electricity, magnetism and electric-magnetism, electrical measurement, circuitry and electrical systems.

(ii) Electricity - Electronics 22A (2880)

This course provides basic theory necessary for advanced work in electricity and electronics. Topics include: alternating voltage and current, inductance, capacitance, circuitry, semi-conductors, transistors and power supplies.

b. Electricity

(iii) Electricity 22B (Residential Wiring) (2881)

The course deals with the theory and skills required to wire a house. The content includes basic electrical theory, code requirements, house circuitry, tool usage, and practice in wiring a building.

(iv) Electricity 22C (Electrical Servicing) (2882)

This course includes content on service equipment and tools, troubleshooting techniques, service procedures and practice in appliance repairing.

(v) Electricity 32A (Commercial Wiring) (3880)

Content of this course includes: drawing plans for electric wiring, wiring methods, wiring hardware, tool and equipment use, control equipment and practical experience in all phases of commercial wiring.

(vi) Electricity 32B (Electro-Mechanical) (3881)

Course content includes theory of and practice with: generators, A.C. and D.C. motors and transformers.

(vii) Electricity 32C (3882)

Students may increase their competencies in areas covered previously in the Electrical program or engage in electrical work in industry by means of a program co-ordinated by the Electricity teacher and under the supervision of a journeyman on the job.

c. Electronics

(iii) Electronics 22B (AM-FM) (2889)

This course consists of theory, application and practice related to radio transmission and reception which includes: power supplies, detectors, amplifiers, AM and FM equipment, components, test equipment and a study of an operating transmission and reception system.

(iv) Electronics 22C (Solid state and i.c. devices) (2890)

The course content includes a review of transistors, a study of integrated circuits and solid state devices.

(v) Electronics 32A (T.V. Receivers) (3888)

Course content includes: occupational information, T.V. signal transmission, T.V. Circuitry, video signal and picture reproduction, antennas, trouble shooting and servicing a T.V. receiver.

(vi) Electronics 32B (Digital Logic and/or Instrumentation) (3889)

Course content includes: binary arithmetic, codes, logic circuits and study of the practical computer, and/or the instrumentation portion of the course deals with the theory and practice of electrical and electronic measuring instruments. Content may be skewed to the interests of the students and the equipment available.

(vii) Electronics 32C (3890)

The content of this module may be used to expand on topics studied in previous modules. Studies may include industrial electronics, color T.V. or others as appropriate to the situation.

E. PERSONAL SERVICES

The career field of Personal Services includes beauty culture, food preparation, fashions and fabrics and health services. Students may build a program for career development by selecting courses from the various fields within the constraints of prerequisites or concentrate on one major.

a. Beauty Culture

(i) Beauty Culture 12 (1832)

The course provides occupational information and theory and practice as it relates to the following topics: care and maintenance of equipment, personal hygiene, hairstyling, manicuring, personality development.

(ii) Beauty Culture 22A (2832)

Course content includes: hairstyling, setting, work organization, facials and make-up, scalp treatment, shampoos, public hygiene and customer work.

(iii) Beauty Culture 22B (2833)

Course content includes: physiology, anatomy, skin and scalp, facial treatments, cold waving, hair coloring, advanced hairstyling, hair cutting and practice work.

(iv) Beauty Culture 22C (2834)

The content of this course expands on the topics listed in 22B with an emphasis on practical application.

(v) Beauty Culture 32A (3832)

Course content includes: permanent hair coloring, hair bleaching, fashion cuts and styles, pedicuring, salesmanship and shop management.

(vi) Beauty Culture 32B (3833)

The course gives practice in advanced work in hairstyling with emphasis on workmanship, making decisions as to suitability, and practice in salesmanship and management.

(vii) Beauty Culture 32C and D (3834 and 3835)

The emphasis of these courses is customer service, skill development and competency in dealing with customers.

b. Food Services

(i) Food Preparation 12 (1896)

The course content outlines the opportunities in the food service industry, provides instruction in the use of cooking equipment, safety, sanitation, nutrition, menu planning and practical cookery.

(ii) Food Preparation 22A (Kitchen Production) (2896)

The course content includes: vegetable cookery, stocks, soups, sauces, gravies, meats and desserts.

(iii) Food Preparation 22B (Pantry Production) (2897)

Contents of the course include: production of sandwiches and garnishes, salads and appetizers.



(iv) Food Preparation 22C (Short Order) (2898)

The course provides experiences in the preparation of beverages, eggs; utilization of dairy products, breakfast foods, and menus.

(v) Food Preparation 32A (Kitchen Production) (3896)

Students become involved in commercial type cooking operations and serving the public. Emphasis is placed on meat, fish, poultry, soups and salads.

(vi) Food Preparation 32B (Baking and Decorating) (3897)

Content relates to: baking ingredients, cakes, pastries and yeast doughs, desserts and decorating.

(vii) Food Preparation 32C (Kitchen Management)

Content includes: management, nutrition, purchasing, planning, costing and serving food. Part of the time may be spent in a commercial establishment.

(viii) Food Preparation 32D (3899)

Students may concentrate on special interest areas related to previous modules and/or work in a commercial food outlet under the supervision of the Food Preparation teacher.

c. Fashion and Furnishings

(i) Fashion and Furnishings 12 (Quick and Easy Sewing) (1861)

In this introductory course students will be introduced to career fields in clothing, how to plan a wardrobe, learn about the various fabrics, use patterns and sewing machines.

(ii) Fashion and Furnishings 22A (Knits) (2861)

The content of this module includes the use, sewing and care of knits.

(iii) Fashion and Furnishings 22B (Fashion World) (2862)

The principles and elements of design, fashions, modelling, consumerism, merchandising, and the production of projects make up the study and activities of this module.

(iv) Fashion and Furnishings 22C (Tailoring) (2863)

Content includes: fabrics for tailoring, fitting and alterations, sewing techniques and use of accessories.

(v) Fashion and Furnishings 32A (Interior Design) (3861)

Content includes: principles and elements of design as related to fabrics used in the home, and projects dealing with window dressing, upholstery and table linen.

(vi) Fashion and Furnishings 32B (Custom Sewing and Textiles) (3862)

Content includes a study of career opportunities, management, merchandising, cleaning methods and commercial projects.

Alternate

Students may select a methodology known as Production Technology to achieve the objects of 32B. Content would include:

An introduction to industry, the division of labour, personnel organization, research and development, a simulated production experience and the impact of technology on the textile industry and its workers.

(vii) Fashion and Furnishings 32C (3863)

Students may concentrate on special interest areas related to previously completed modules and/or work in a commercial sewing establishment under the supervision of the Fashion and Furnishings teacher.

d. Health Services

The Health Services program consists of a total of 20 credits. Students may couple this program with Business Education courses to develop a career field.

(i) Health Services 12 (1961)

The content of this module is designed to introduce students to the various occupational areas in the health field as well as a study of home nursing. First aid is a vital part of the program.

(ii) Health Services 22 (2961)

This module deals with health care centres, assistants, anatomy and physiology, nursing practices, disease identification and safety practices.

(iii) Health Services 32A (3961)

Course content includes: nursing assistant preparation, problems of patients, the working environment, nutritional needs and anatomy and physiology.

(iv) Health Services 32B (3962)

Content includes: introduction to institutional services, communications, anatomy and physiology, human growth, patient care and special patients.

F. PERFORMING ARTS

The career field of Performing Arts includes Performing Arts and Television Crafts. Modules from either area may be selected to give students the option of developing competencies in one of three areas: performance, stage technology or radio/television operations.

a. Performing Arts

(i) Performing Arts 12 (1944)

This module is designed to give students an insight into the various aspects of work on stage and in television. Activities include the use of tools for building stage props, staging procedures and television procedures.

(ii) Performing Arts 22A (Speech) (2944)

Content includes: theatre speech, interpretation of prose and poetry, dialects, and performing.

(iii) Performing Arts 22B (Movement) (2945)

This module includes: stage technique, creative movement and dance, fencing and pantomime.

(iv) Performing Arts 22C (Acting) (2946)

Students will do script analysis, character analysis, perform exercises in improvisation, do radio and T.V. acting, do stylistic acting and learn about makeup.

(v) Performing Arts 32A (History) (3944)

Module content includes: development of playwriting, history of costumes, and the development of theatre operations.

(vi) Performing Arts 32B (Stage Production) (3945)

The gist of this module is the production of a one act play through which experiences will be gained in acting, directing, house and crew management.

(vii) Performing Arts 32C (3946)

This module is unstructured in order to give the student time to engage in in-depth study of a topic previously started or work in the field of performing under the direct supervision of the teacher.

b. Television Crafts

(i) Performing Arts 12 (1944)

This course is common to both Performing Arts and Television. It provides an introduction to the experiences found in these two career areas.

(ii) Television Crafts 22A (Set and Property Construction) (2972)

Course content includes learning to use carpenter's tools, properties of materials for construction and types of scenery.

(iii) Television Craft 22B (Lighting) (2973)

Lighting in television and stage is studied to give technical and artistic knowhow. Students will learn about the elements of lighting, the equipment use and control for both television and stage productions.

(iv) Television Crafts 22C (Studio Operations) (2974)

Course content deals with studio and control room operations: basic electronics, cameras, lenses, video and audio equipment, special effects and VTR techniques.

(v) Television Crafts 32A (Planning Production) (3972)

Students will, in the course of this module, learn to write and produce a television show.

(vi) Television Crafts 32B (Television Production) (3973)

Course activities consist of a wide variety of studio and control room jobs.

(vii) Television Crafts 32C (3974)

With the time available in this module students may expand upon some interest area stimulated in their previous course work or undertake a project in the field of television under the direct supervision of the teacher.

G. HORTICULTURE

a. Horticulture 12, 22, 32

The Horticulture program is limited to very few schools. The curriculum content may be selected from the course guide dated 1967 and taught in modules of five credits each.

b. Land and Life 10, 20, 30

While Land and Life is not in the vocational series it is a course dealing with elements of Horticulture, Agriculture and Forestry.



### 3. COURSES RELATED TO INDUSTRIAL EDUCATION

#### A. Production Science 30 (5 credits) (3729)

Students learn about the organizational structure of industry, production processes and the various problems encountered in producing a salable product or service.

#### B. Work Experience 25 and 35 (2998 and 3998)

Each of the two Work Experience Educational courses consists of 125 hours of time. Students are given some formal lessons on defining occupational interests, job interviewing, preparing a resume, deportment and related topics. The majority of the time is spent in a realistic work situation. The expectations for the Work Experience Education program are that students will:

- (1) have an opportunity to participate in meaningful work
- (2) be enabled to explore career opportunities
- (3) gain an understanding of the importance of developing acceptable work habits, good grooming, and need for self-discipline
- (4) develop an understanding of positive attitudes for getting along with people
- (5) learn about the organization of business and the relationships of employee to employer, unions, and government, through direct contact with these agencies
- (6) assist students in making the transition from school to the world of work.

## VI. SAFETY

Every lab/shop must have an effective safety program. Students must be taught, in each and every course studied within the industrial education framework, the "hows and whys" inherent in the safety program. It is the responsibility of the teacher to give continuous and vigilant supervision to ensure that all students are aware of and use safe practices. Information on safety education may be obtained from the Industrial Education Consultant in the Edmonton and Calgary Regional Offices.

## VII. ORGANIZATION FOR TEACHING

### A. Teacher Qualification

First level courses identified by the numbers "10" or "12" may be taught by teachers of less than journeyman status but with competencies considered adequate by the school Principal and the Superintendent of Schools.

Second and third level courses identified as "22" and "32" must be taught by teachers qualified in the particular trade or technology as follows:

1. Journeyman certificate, or equivalent in the non-designated trade areas.
2. Valid teaching certificate.

### B. Facility Standards

Facilities and staff used to teach senior career development courses for which Industrial Education grants are available must be approved annually by a Department of Education Consultant for Industrial Education. This approval is verified through the signature of the Consultant for Industrial Education on the "A" Form and a letter approving the courses and teachers listed on the "A" Forms.

#### VIII. GRANTS

Vocational grants are available for programs of instruction:

- (i) including vocational major courses numbered 22, 32, 25 or 35, and which may include approved minor courses numbered 12 and 15,
- (ii) which does not include courses commonly referred to as commercial electives or business education,
- (iii) in which all courses are taught by teachers with approved trade qualifications, and
- (iv) which is approved annually by a Department of Education consultant for Industrial Education,

These regulations do not apply to

- (a) boards of school districts established to educate pupils or children whose parents are employees of the Government of Canada, and
- (b) pupils or children whose parents reside in a school district described in clause (a) but who attend a school of another board.

The following grants apply to 1978-79:

A grant may be paid in accordance with this section to a board in respect of instruction provided by it:

- (a) the sum of \$2,330 per year
  - (i) for each shop facility or group of shop facilities at

any one school site where the shop facility or group of shop facilities is used for day school instruction in any one trade or other occupational subject in a vocational program, and

(ii) for each single shop or facility at one school site where the single shop or facility is used for day school instruction in a number of trade or occupational subjects in an academic-occupational program.

(b) The sum of \$300 per year

(i) for each pupil or day extension student enrolled in a vocational program carrying a total credit of at least 15, and

(ii) for each pupil or day extension student enrolled in an academic-occupational program provided that the pupil or day extension student is instructed in vocational or business education courses or both for at least 50% of all instruction time in the program of that person; and

(c) in addition to the sum per pupil or day extension student provided in clause (b), a sum of \$270 per year for each pupil or day extension student whose education is the responsibility of another board.

11. In lieu of grants under section 10 a board may be paid in accordance with the following in respect of instruction provided by it:

(a) the sum of \$24.25 for each credit enrolment unit (C.E.U) in a vocational course included in a vocational program;

(b) in addition to the sum per credit enrolment under clause (a) a sum of \$8.75 per C.E.U. for each pupil or day extension student whose education is the responsibility of another board;

- (c) the sum of \$24.25 per credit enrolment unit or equivalent in instructional time in an academic-occupational program for those vocational or business education courses which are no more than 50% of all instruction time in the program of a person; and
- (d) in addition to the sum per credit enrolment unit or equivalent in time under clause (c) a sum of \$8.75 per C.E.U. for each pupil or day extension student whose education is the responsibility of another board.











9 780000 138256

NOT TO BE TAKEN FROM THIS ROOM  
EXCEPT WITH LIBRARIAN'S PERMISSION

